Washington State
Department of Transportation

Access Point Decision Report Assumptions
I-405 Congestion Relief and Bus Rapid Transit Projects

June 23, 2004

The undersigned parties concur with the Access Point Decision Report Assumptions for the I-405 Congestion Relief and Bus Rapid Transit Projects presented in this document.

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Introduction and Project Description

The following description of the I-405 Corridor Program is from the June 2002 Final EIS.

The proposed I-405 Corridor Program improvements include freeway widening, new high capacity transit (HCT), added arterial capacity, and other improvements that address multimodal transportation needs throughout the length of the I-405 corridor. The southern terminus of I-405, at its intersection with I-5 in the city of Tukwila, and northern terminus of I-405, at its intersection with I-5 in Snohomish County, was identified as logical limits for the proposal because the termini encompass the entire length of the I-405 facility. This enables proposed solutions to be examined at a level that demonstrates independent utility, and ensures that solutions consider the direct relationship with I-5, which is the major north-south travel route in western Washington.

The EIS Selected Alternative would provide expansion of I-405 by up to two lanes in each direction, along with improving major interchanges and connecting arterial/freeway capacity. In addition, collector-distributor lanes, auxiliary lanes, and truck climbing lanes would be added along I-405 at locations where they are warranted. The I-405/SR 167 interchange would be improved and SR 167 would be widened by up to two lanes in each direction south of I-405 to S 180th Street in Kent. Arterial capacity and continuity improvements would be implemented, together with arterial improvements planned by local jurisdictions. A bus rapid transit (BRT) system would be developed throughout the I-405 corridor with east-west connections to Redmond and Issaquah. Local bus transit service within the study area would be increased by up to 75 percent based on demand. HOV direct access ramps on I-405, arterial HOV priority for transit, additional park-and-ride capacity, additional transit center capacity, a new bus maintenance and operating facility, and pedestrian and bicycle improvements would be provided.

The freeway design includes an added 4-foot buffer between the general purpose lanes and the HOV lane on I-405. The 4-foot buffer separation will allow for HOV safety and operations, and will also allow for future consideration of an expanded managed lanes operation along I-405.

Truck freight traffic improvements and an expanded package of TDM strategies will be implemented. The expanded TDM strategies may include pricing if adopted as part of a regional pricing policy.

Design Year and Opening Year

The assumed year of opening will be 2014. This year was selected as being a reasonable implementation year for the Implementation Plan improvements based upon corridor priorities and assumed funding availability. Individual improvements within the corridor project sections may be open to traffic before 2014.

Projects will be prioritized and grouped so that full projects may be completed to eliminate or reduce the most significant corridor capacity needs. Subsequent traffic analyses may be necessary for projects that come on-line after 2014. As available revenues are matched to post-2014 projects, the appropriate opening year will be selected and revised traffic forecasts and operational analyses will be prepared.

The design year, 2030, is consistent with the corridor strategic planning horizon and environmental documentation. It is 20 years past the start of construction, and is the forecast year

for the regional Metropolitan Transportation Plan (MTP), "Destination 2030," adopted in May 2001. "Destination 2030" contains household, employment, and population forecasts for 2030. This plan, which superceded the 1995 MTP, meets federal and state planning process requirements. Federal law requires that the MTP be reviewed every three years and that a new plan be prepared or the existing plan be updated. The adoption of the next MTP update is assumed to be mid to late 2004, so the I-405 project forecasts are based on the current "Destination 2030" forecasts.

Year 2014 and 2030 both assume that the HOV lane and direct access ramps will operate at a 3+ eligibility requirement. The HOV bypass lanes at on ramps will have a 2+ requirement.

Managed Lanes Configuration

The project is designing for a lane configuration that has one HOV lane and four general-purpose lanes. It is possible that this configuration may change to two HOV lanes with 2+ occupancy and three general-purpose lanes in the future. This difference is an operational decision and would require analysis of the 2+3 configuration, but would not necessitate a new APDR document to be submitted.

Intersection/Freeway Volumes

Arterial street impacts will be evaluated using the Synchro and CORSIM models at signalized intersections. Intersection traffic volumes will be developed from the travel forecasts using a Fratar (matrix balancing) post-processing technique. The existing peak hour timing for intersection splits will be recorded and entered into the Synchro files. Freeway inputs will be based upon the results from CORSIM.

The APDR intersection operations analysis will include interchange ramp intersections and adjacent arterial intersections as required to demonstrate their ability to collect and distribute traffic to and from the interchange with new or revised access points.

Freeway Operations Analysis

The I-405 Projects require a simulation model capable of analyzing freeway and interchange/intersection geometry including weaving sections, multiple vehicle classes, and transit operations. VISSIM was selected for the I-405 Projects microsimulation, meets these needs, and also provides animation graphics.

Operational modeling of the corridor will be conducted over two six-hour periods (5-11 AM and 2-8 PM) using the VISSIM software. The existing **peak one-hour volumes** generally fall into the 7:45 – 8:45 AM and 4:30 – 5:30 PM time periods. The six-hour periods were required to capture the effects of total peak-period congestion on I-405 operations, particularly in the horizon years where significant peak-spreading is forecast to continue. All traffic analysis results will be reported for the AM and PM peak hours only.

The following scenarios will be analyzed and included in the APDR:

- 2002 Base Year
- 2014 No Action
- 2014 Implementation Plan
- 2030 No Action

- 2030 Master Plan

The FHWA report "Guidelines for Applying Traffic Microsimulation Modeling Software" will be used to develop and calibrate the VISSIM model. HCS calculations will be conducted by the I-405 team and included in the APDR submittal. Microsimulation results will not be directly interpreted into HCS LOS tables. All results will be based on the AM and PM peak hours. Volume throughput, speed, and density will be used as performance measures.

Travel Forecasts

For this study, the current regional model from PSRC will be utilized for 2014 (year of opening) and 2030 (design year). The 2030 model includes projects adopted in the region's Metropolitan Transportation Plan ("Destination 2030," adopted May 24, 2001). Detailed analysis of each project section required roadway network detail not available in the four-county regional traffic model. Additional zonal and network detail was obtained from the local agency EMME/2 models in conjunction with the PSRC model. The network was checked to make sure all the future projects in the PSRC model are represented. Validation of the model at the screen line level will be carried out for different time periods.

Existing volumes in the study area were used as a base for all forecasts of future year volumes. Volumes were derived from the following sources:

- AM and PM peak mixed-use traffic volumes on the mainline and associated ramps: WSDOT *Ramp & Roadway Traffic Report* – 2000 & 2002 and the Northwest Regional Traffic Data (2000, 2001, 2002, 2003)
- AM and PM peak intersection turning movement volumes at study area intersections: City of Bellevue, City of Bothell, City of Kirkland, City of Renton, City of Tukwila and Traffic Count Consultants.

Freeway & HOV Traffic Forecasts

Forecasts were developed for SOV and HOV classes of vehicles. Truck volumes were estimated based upon previous truck counts and forecasts conducted for the I-405 Corridor Program EIS.

HOV 2+ and HOV 3+ trip tables were adapted from the PSRC model for different time periods. Multi-class assignments were carried out using the PSRC model. For 2014 and 2030, an HOV 3+ operating rule was assumed, with an HOV 2+ operating rule for HOV bypass ramps.

Detailed intersection analysis will be performed on the post-processed forecast results. The results will then be used as inputs for the freeway model.

Travel Forecast Model Assumptions

The projects listed below are assumed to be completed by the year 2014. These committed projects are included in all future forecast scenarios.

Projects Completed or Assumed Completed by 2004 / 2005	
• HOV I-405	SR-527 (Canyon Park) to I-5
• HOV I-5	S 320th termini

• SR-519		Phase 1
• SR-525		SR-99 to Paine Field (5 lanes)
• I-5		Direct HOV/Transit access Lynnwood Transit Center
• I-405		NE 128th Lane Access
• I-405		Direct HOV/Transit access Bellevue Transit Center
• I-90		Direct HOV/Transit access Eastgate Park and Ride
• King Co.		Sammamish Plateau Access Road
• WSDOT		Sunset Interchange
• ST		Tacoma Link
• ST		Commuter Rail: Tacoma to Seattle
• ST		2006 Service concepts
Nickel Projects Constructed by 2005		
• Pierce		SR7/SR 507 to SR 512
• Pierce		SR 161 Corridor Improvements – 176th to 234th
• Pierce		SR 16 HOV Imp - Olympic View Dr. to Union Ave.
• King		I-5 NE 175th St. to NE 205th St. - NB Auxiliary Lane
• King		I-90 - Two-Way Transit & HOV
• King		SR 161 - Jovita Blvd to S. 360th St.- Widen to 5 Lanes
• King		SR 167 - 15th Street SW to 15th Street NW - HOV
• King		SR 522 - Bothell - UW Campus Access
• King		I-5 - Pierce County Line to S 320th (Stage 4 HOV)
• King		SR 99 - Aurora Ave - N Corridor Transit/HOV Lanes
• Snohomish		SR 9 - SR 522 to 176th St. SE - Stage 1 and 2
• Snohomish		SR 527 - 132nd SE to 112th SE Additional Lanes
Nickel Projects Constructed After 2005		
• Pierce		I-5 - Port of Tacoma Road to King/Pierce Co. Line HOV
• Pierce		SR 161 - 36th to Jovita - Additional Lanes
• Pierce		SR 410 - Additional Lanes (214th to 234th
• Snohomish		I-5 - Everett - SR 526 to US 2 - HOV Lanes
• Snohomish		SR 522 - Snohomish River to US 2, 4 Lane Widening
• King		SR 520 - W Lake Sammamish Pkwy to SR 202 -Add HOV
2014 Committed Arterial Projects (I-405 Corridor Program EIS Project # shown in second column)		
• Bothell, Snohomish	R.AC-21	120th NE/39th SE - NE 195th to Maltby Rd - 4/5 lanes including new connection
• Bellevue	R-08	NE 29th Pl (148th Ave NE to NE 24th St)/Construct new 2-lane road
• Snohomish	R-10	SR 524 (24 St SW to SR 527)--- Widen to 4/5 lanes including sidewalks, bike lanes

• Kirkland	R-21	NE 120 St (Slater Ave to 124 Ave NE)--- Construct new 3-lane roadway with ped/bike facilities
• Redmond/ WSDOT	R-25	SR 202 Corridor Improvements (East Lake Sammamish Pkwy to Sahalee Way)--- Widen to 3/5 lanes; intersection improvements with bike/ped facilities
• Redmond	R-26	NE 90 St (Willows Rd to SR 202)--- Construct new 4/5 lanes + bike facilities
• Redmond	R-28	West Lake Sammamish Parkway (Leary Way to Bel-Red Rd)--- Widen to 4/5 lanes + CGS, bike lanes
• Renton	R-36	Oakesdale Ave SW (SW 31st to SW 16th)--- Construct new 5 lane roadway with CGS
• KCDOT	R-39 & R.AC-2	140 Ave SE (SR 169 to SE 208 St)--- Widen to 5 lanes SR 169 to SE 196 St, widen for turn channels on SE 196. Combines 2 King County CIP projects. A major North-South arterial that serves the Soos Creek Plateau and Fairwood.
• KCDOT	R-40 & R.IC-24	Juanita-Woodinville Way (NE 145 St to 112th Ave NE) Widen to 4/5 lanes + CGS, walkway/pathway
• KCDOT	R-47	NE 124 St (Willows Rd to SR 202)--- Widen to 3/4 lanes + CGS, bike facilities; traffic signal.
• Woodinville	R-51	Woodinville-Snohomish Rd/140 Ave NE (NE 175 St to SR 522)--- Widen to 4/5 lanes + CGS, bike lanes
• Bellevue	R-101	150th Ave SE---Widen to 7 lanes from SE 36th to SE 38th; add turn lanes
• Redmond	R-111 & R.AC-15	Willows Rd Corridor Improvements-- Channelization of Willows Rd/Redmond Way intersection and widening of Willows Rd from NE 116th to NE 124th
• Snohomish	R-117	39th Ave SE Realignment at SR 524 and York Rd--- Construct 4-way intersection to replace 2 offset intersections
• WSDOT	R.PA-27	SR 520/SR 202 Interchange --- Complete interchange by constructing a new ramp and thru lane on 202 to SR 520 (ETP R-29) NOTE: Part of Nickel Package

Outside of the I-405 corridor, the 2030 network will consist of planned, programmed and reasonably foreseeable projects to be implemented during the next 20-25 years. This network includes all of the projects assumed for 2014, plus additional regional and local projects that have been given high priority in recent programming processes. Several of these projects have the potential to affect the travel conditions along the I-405 corridor, so their inclusion in the No Action network is important to establish realistic traffic forecasts for environmental and design purposes. All of the projects are included within the PSRC *Destination 2030* as being important to implement by 2030. While several are currently not funded, they have been consistently included in multi-jurisdictional funding forums, such as the RTID and Eastside Transportation Plan (ETP) 10-year Mobility Action Priorities. Given the importance of transportation in the Puget Sound Region, it is reasonable to assume that transportation investments will continue throughout the next 30 years. The assumed projects represent only a portion of the overall regional needs.

The following table provides a listing of the projects assumed to be completed by 2030. The selection of these projects met the following rationale:

- Included within Destination 2030;
- Included within established funding and prioritization processes (e.g. RTID; ETP, SKATBD etc);
- Potential to affect transportation conditions along the I-405 corridor; and
- Environmental processes either complete, in process or expected to be underway by 2005.

Regional Projects to Include for 2030 No Action Definition for I-405

Project	Project Description for Modeling Purposes (2030 No Action)	Description in Metropolitan Transportation Plan (MTP)	Justification for Assumed Model Description
SR 509 Extension	6 lane freeway	6 lane freeway	FEIS, ROD - RTID funding
SR 167 Extension (Tacoma)	6 lane freeway	6 lane freeway	FEIS, ROD - RTID funding
SR 167 (I-405 to Puyallup)	Add HOV lanes 15th St SW to SR 161 (Puyallup) Add 1 lane each direction from Carr Rd/180th St to SR 18	Add HOV lanes 15th St SW to SR 161 (Puyallup)	Pre EIS study completed; EIS start in 2005; RTID funding being considered for minimum of 1 lane each direction I-405 to SR 18
Alaskan Way Viaduct	Existing capacity (4/6 lane expressway)	Existing capacity (4/6 lane expressway)	DEIS started- March 2004 completion
SR 520 (I-405 to Montlake Blvd)	4 lane freeway + 1 HOV lane (6 lane option) & No tolls.	6 lane freeway + 1 HOV lane (8 lane option)	DEIS started- Complete Spring 2005; no preferred alternative - use conservative approach
SR 518	Add 1 eastbound GP lane from airport access to I-5; interchange improvements at SR 509/SR 518	Add 1 eastbound GP lane from airport access to I-5; interchange improvements at SR 509/SR 518	Environmental expected 2005/5; RTID funding; ties directly into I-405
I-90 - Two-way Transit and HOV	Alternative R-8A - no rail across I-90.	Not specifically listed except for potential future conversion to light rail	DEIS done; FEIS 2004; preferred alternative selected; ties to future light rail across corridor
SR 18 (Auburn to I-90)	4 lane expressway SR 516 to I-90	4 lane expressway SR 516to I-90	EIS starting (nickel funding)

Intersection Traffic Forecasts

Future intersection volumes for all alternatives were developed using traffic forecasts from the PSRC models and post processed ramp volumes. The future estimates of demand were then applied to the existing turning movement counts to determine future traffic movement. These intersection volumes were balanced using the freeway ramp volumes as control totals.

Transit Ridership Forecasts

Transit ridership forecasts were also developed using the PSRC travel forecast model. All Sound Transit routes and King County Metro routes using the I-405 facility were included to reflect both current and future service. Future growth in transit vehicle volumes within the corridor took into account the following:

- Existing transit volumes from current Sound Transit and King County Metro timetables
- Expansion in service based upon historical King County annual growth trends
- Estimated growth in service based upon *King County 6-Year Development Plan* and the Sound Transit implementation schedule for year 2005
- Examination of 2010 and 2030 transit networks developed by the PSRC
- Examination of results of TransLake Washington Study Alternatives.

Report Format

The document will order the eight points as described below by FHWA (55 FR 42670 as supplemented February 11, 1998) not the order described in the WSDOT Design Manual Chapter 1425.

1. The existing interchanges and/or local roads and streets in the corridor can neither provide the necessary access nor be improved to satisfactorily accommodate the design-year traffic demands while at the same time providing the access intended by the proposal.
2. All reasonable alternatives for design options, location and transportation system management type improvements (such as ramp metering, mass transit, and HOV facilities) have been assessed and provided for if currently justified, or provisions are included for accommodating such facilities if a future need is identified.
3. The proposed access point does not have a significant adverse impact on the safety and operation of the Interstate facility based on an analysis of current and future traffic. The operational analysis for existing conditions shall, particularly in urbanized areas, include an analysis of sections of Interstate to and including at least the first adjacent existing or proposed interchange on either side. Crossroads and other roads and streets shall be included in the analysis to the extent necessary to assure their ability to collect and distribute traffic to and from the interchange with new or revised access points.
4. The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" for special purpose access for transit vehicles, for HOV's, or into park and ride lots may be considered on a case-by-case basis. The proposed access will be designed to meet or exceed current standards for Federal-aid projects on the Interstate System.
5. The proposal considers and is consistent with local and regional land use and transportation plans. Prior to final approval, all requests for new or revised access must

be consistent with the metropolitan and/or statewide transportation plan, as appropriate, the applicable provisions of 23 CFR part 450 and the transportation conformity requirements of 40 CFR parts 51 and 93.

6. In areas where the potential exists for future multiple interchange additions, all requests for new or revised access are supported by a comprehensive Interstate network study with recommendations that address all proposed and desired access within the context of a long-term plan.
7. The request for a new or revised access generated by new or expanded development demonstrates appropriate coordination between the development and related or otherwise required transportation system improvements.
8. The request for new or revised access contains information relative to the planning requirements and the status of the environmental processing of the proposal.